

a second insulating film comprising a deposition film over said semiconductor film; and

a gate electrode formed adjacent to said channel region of said semiconductor film,

wherein said semiconductor film contains hydrogen atoms at a concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$, and oxygen atoms at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less.

3. A device according to claim 2, wherein said semiconductor film further contains a halogen element at a concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$.

4. A device according to claim 2, wherein said semiconductor film further contains a metal element which promotes crystallization of silicon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less.

5. A device according to claim 2, wherein said first insulating film includes at least one halogen element selected from fluorine and chlorine.

6. A device according to claim 2, wherein said channel region contains carbon and nitrogen at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less, respectively.

7. An EL display device having at least one thin film transistor comprising:

a semiconductor film formed on a substrate having an insulating

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surface, said semiconductor film having at least a channel region;

at least one gate insulating film adjacent to said semiconductor film, said one gate insulating film comprising thermal oxide of said semiconductor film;

a gate electrode adjacent to said channel region of said semiconductor film with said gate insulating film interposed therebetween;

an inorganic interlayer insulating film over said semiconductor film and said gate electrode; and

an organic film over said inorganic interlayer insulating film,

wherein said semiconductor film contains a halogen element at a concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$, and oxygen atoms at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less.

8. A device according to claim 7, wherein said semiconductor film further contains hydrogen atoms at a concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$.

9. A device according to claim 7, wherein said semiconductor film further contains a metal element which promotes crystallization of silicon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less,

10. A device according to claim 7, wherein said inorganic interlayer insulating film comprising one or plurality films selected from a silicon oxide film, a silicon nitride film, and a lamination film thereof.

11. A device according to claim 7, wherein said organic film comprising a resin material.

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12. A device according to claim 7, wherein said gate insulating film includes at least one halogen element selected from fluorine and chlorine.

13. A device according to claim 7, wherein said halogen element is selected from the group consisting of fluorine, chlorine, and a mixture of fluorine and chlorine.

14. A device according to claim 7, wherein said channel region contains carbon and nitrogen at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less, respectively.

15. An EL display device having at least one thin film transistor, said thin film transistor comprising:

a semiconductor film formed over a substrate having an insulating surface, said semiconductor film comprising at least a channel region;

a first insulating film comprising a thermal oxide film of said semiconductor film thereon;

a second insulating film comprising a deposition film over said semiconductor film; and

a gate electrode formed adjacent to said channel region of said semiconductor film,

wherein said semiconductor film contains a metal element which promotes crystallization of silicon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less, and oxygen atoms at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less.

16. A device according to claim 15, wherein said semiconductor film further contains hydrogen atoms at a concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$.

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17. A device according to claim 15, wherein said semiconductor film further contains a halogen element at a concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$.

18. A device according to claim 15, wherein said first insulating film includes at least one halogen element selected from fluorine and chlorine.

19. A device according to claim 15, wherein said metal element is one or a plurality elements selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au

20. A device according to claim 15, wherein said channel region contains carbon and nitrogen at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less, respectively.

21. An EL display device having at least one thin film transistor comprising:

a semiconductor film formed on a substrate having an insulating surface, said semiconductor film having at least a channel region;

at least one gate insulating film adjacent to said semiconductor film, said one gate insulating film comprising thermal oxide of said semiconductor film;

a gate electrode adjacent to said channel region of said semiconductor film with said gate insulating film interposed therebetween;

an inorganic interlayer insulating film over said semiconductor film and

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said gate electrode; and

an organic film over said inorganic interlayer insulating film,

wherein said semiconductor film contains a halogen element at a concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$, and hydrogen atoms at a concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$.

22. A device according to claim 21, wherein said semiconductor film further contains oxygen atoms at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less.

23. A device according to claim 21, wherein said semiconductor film further contains a metal element which promotes crystallization of silicon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less.

24. A device according to claim 21, wherein said inorganic interlayer insulating film comprising one or plurality films selected from a silicon oxide film, a silicon nitride film, and a lamination film thereof.

25. A device according to claim 21, wherein said organic film comprising a resin material.

26. A device according to claim 21, wherein said gate insulating film includes at least one halogen element selected from fluorine and chlorine.

27. A device according to claim 21, wherein said halogen element is selected from the group consisting of fluorine, chlorine, and a mixture of fluorine and chlorine.

28. A device according to claim 21, wherein said channel region contains carbon and nitrogen at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less, respectively.

29. An EL display device having at least one thin film transistor, said thin film transistor comprising:

a semiconductor film formed over a substrate having an insulating surface, said semiconductor film comprising at least a channel region;

a first insulating film comprising a thermal oxide film of said semiconductor film thereon;

a second insulating film comprising a deposition film over said semiconductor film; and

a gate electrode formed adjacent to said channel region of said semiconductor film,

wherein said semiconductor film contains a metal element which promotes crystallization of silicon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less, and hydrogen atoms at a concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$.

30. A device according to claim 29, wherein said semiconductor film further contains oxygen atoms at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less.

31. A device according to claim 29, wherein said semiconductor film further contains a halogen element at a concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$.

32. A device according to claim 29, wherein said first insulating film

includes at least one halogen element selected from fluorine and chlorine.

33. A device according to claim 29, wherein said metal element is one or a plurality elements selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au

34. A device according to claim 29, wherein said channel region contains carbon and nitrogen at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less, respectively.

35. An EL display device having at least one thin film transistor comprising:

a semiconductor film formed on a substrate having an insulating surface, said semiconductor film having at least a channel region;

at least one gate insulating film adjacent to said semiconductor film, said one gate insulating film comprising thermal oxide of said semiconductor film;

a gate electrode adjacent to said channel region of said semiconductor film with said gate insulating film interposed therebetween;

an inorganic interlayer insulating film over said semiconductor film and said gate electrode; and

an organic film over said inorganic interlayer insulating film,

wherein said semiconductor film contains a metal element which promotes crystallization of silicon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less, and a halogen element at a concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$.

36. A device according to claim 35, wherein said semiconductor film

further contains oxygen atoms at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less.

37. A device according to claim 35, wherein said semiconductor film further contains hydrogen atoms at a concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$.

38. A device according to claim 35, wherein said inorganic interlayer insulating film comprising one or plurality films selected from a silicon oxide film, a silicon nitride film, and a lamination film thereof.

39. A device according to claim 35, wherein said organic film comprising a resin material.

40. A device according to claim 35, wherein said gate insulating film includes at least one halogen element selected from fluorine and chlorine.

41. A device according to claim 35, wherein said halogen element is selected from the group consisting of fluorine, chlorine, and a mixture of fluorine and chlorine.

42. A device according to claim 35, wherein said metal element is one or a plurality elements selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au

43. A device according to claim 35, wherein said channel region contains carbon and nitrogen at a concentration of $2 \times 10^{19} \text{ cm}^{-3}$ or less,